



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,430	07/10/2006	Peter Glanville Chapman	HAC-044	9320
36822 7590 03/28/2011 GORDON & JACOBSON, P.C. 60 LONG RIDGE ROAD SUITE 407 STAMFORD, CT 06902				
EXAMINER				
BELYAEV, YANA				
ART UNIT		PAPER NUMBER		
1741				
MAIL DATE		DELIVERY MODE		
03/28/2011		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/552,430

Applicant(s)

CHAPMAN ET AL.

Examiner

YANA BELYAEV

Art Unit

1741

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41, 42 and 47-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41, 42 and 47-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 August 2010 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 49, 53 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

4. **Regarding claims 53 and 54**, the originally filed disclosure does not disclose replacing a downstream tube size apparatus to actively decrease the second outer diameter, in fact the original disclosure does not mention anywhere that the second outer diameter is decreased, therefore the Examiner does not understand how the second outer diameter is decreased.

5. **Regarding claim 49**, the originally filed disclosure does not provide support for the statement, “the hoop strength is a tensile strength.”

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 41-42, 47-49, and 59-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Patent Publication WO 97/06940 (Chapman hereinafter) in view of US 6,457,532 (Simpson hereinafter).

Regarding claims 41 and 48, for purposes of efficient examination, the examiner renumbers the subsections of claim 48 in order to be able to examine claims 41 and 48 together since they claim the exact same limitations. In claim 41, (ii) & (iii) are equivalent to (ii) in claim 48, thus the subsections of claim 48 are re-numbered as follows: (ii) renumbered to (iii), (iii) to (iv), (iv) to (v), and (v) to (vi).

Chapman teaches a method for producing oriented plastic tube, comprising performing a sequence, including:

(i) extruding a tube to a start-up inner diameter and a start-up outer diameter selected to facilitate the passage of the tube over a diametrical expansion apparatus (page 4, lines 30-31), and (ii) & (iii) passing the tube of (i) over the diametrical expansion apparatus such that the start-up outer diameter of the extruded tube of (i) is now a first adjusted outer diameter (page 4, lines 31-34); (iv) temperature conditioning the tube of the first adjusted outer diameter (page 6, lines 9-10), diametrically expanding the tube of (iv) into an oriented tube having a second outer diameter larger than the first adjusted outer diameter (page 6, lines 16-17), and cooling the oriented plastic tube of (v) (page 10, lines 15-18).

Chapman does not disclose that the sequence is continuous or that the first adjusted outer diameter is actively varied to control circumferential draw of the tube.

However, making a sequence continuous without changing any other method steps (i.e. just performing a known process continuously), is not a patentable limitation since it would have been obvious to one of ordinary skill at the time of the invention to have increased the efficiency of a process by changing it from an intermittent process to a continuous process. See *In re Dilnot*, 319 F.2d 188, 138 USPQ 248 (CCPA 1963) and *MPEP* 2144.04 V E.

Additionally, Simpson teaches an expansion apparatus with a variable diameter. Simpson states that that the effective maximum outside diameter of the rollers depends on the position of the rollers along the axis of the expansion apparatus; this allows relief of radially outwardly directed forces by longitudinally retracting the expansion apparatus to allow the rollers collectively to move longitudinally in the convergent direction and hence collectively to

retract radially inwards away from the bore against which they were immediately previously pressing (col. 4, lines 22-30). This is interpreted by the Examiner as actively varying the diameter since the rollers are diverging to increase the diameter or converging to decrease the diameter, which is active variation in the diameter of the pipe.

Since the amount of circumferential draw introduced by diametrical expansion is fixed by the ratio of the final pipe mid-wall circumference to the mid-wall circumference of the extruded tube, the diameter of the expansion apparatus directly affects the circumferential draw. Therefore varying the variable diameter of the expansion apparatus, intrinsically affects the circumferential draw, it would have been obvious for one of ordinary skill in the art at the time of the invention to have varied the variable diameter in the expansion apparatus to control the circumferential draw.

It would have been obvious for one of ordinary skill in the art at the time of the invention to have includes a variable diameter in an expansion apparatus since different sized pipes can be expanded efficiently by the expansion apparatus, since the entire process would not have to be stopped to replace the entire expansion apparatus when a different sizes pipe is loaded.

Regarding claims 42 and 61, Chapman discloses that diametrical expansion apparatus includes an expandable plug (page 6, lines 17-20), and diametrically expanding the tube in (v) includes applying an internal pressure to the tube within an expansion zone at a downstream end of the tube with the expandable plug and limiting and maintaining pressure within the expansion zone with the expandable plug (page 6, lines 35-36), and wherein the expandable plug is in an unexpanded state during initial passage of the tube over the diametrical expansion apparatus in

(ii), since before the initial passage of the tube over the diametrical expansion apparatus the tube had just been extruded and not yet affected by any apparatus.

Regarding claim 47 and 62, Chapman discloses a solid mandrel disposed within the diametrical expansion apparatus is utilized to diametrically expand the tube in (v) (page 5, lines 14-15).

Regarding claim 49, Chapman states that in a temperature conditioning zone the tube is treated to attain a specific temperature profile uniformly around the tube wall, so that the subsequent expansion of the tube causes orientation of the polymer molecules principally in the circumferential direction, thus resulting in enhanced physical properties especially increased resistance to hoop stresses (page 6, lines 10-20).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to have controlled the circumferential draw of the tube to vary hoop strength of the oriented tube.

Regarding claims 59 and 60, the circumferential draw is defined by the instant application as the ratio of the final pipe mid-wall circumference to the mid-wall circumference of the extruded tube (p. 7, instant application). Therefore, the circumferential draw can be increased by increasing the final pipe mid-wall circumference or decreasing the mid-wall circumference of the extruded tube. Similarly, the circumferential draw can be decreased by increasing the mid-wall circumference or decreasing the final pipe mid-wall circumference.

In Chapman, increasing and decreasing the final pipe mid-wall circumference would be accomplished by increasing and decreasing, respectively, the second outer diameter, while

increasing and decreasing the mid-wall circumference of the extruded pipe would be accomplished by increasing and decreasing, respectively, the first outer diameter.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have increased the circumferential draw by decreasing the first adjusted outer diameter without increasing the second outer diameter and also, to decrease the circumferential draw of the tube by increasing the first adjusted outer diameter without increasing the second outer diameter.

Regarding claim 63, Chapman does not teach that the hoop strength is the tensile strength.

However, tensile strength is the strength of material expressed as the greatest longitudinal stress it can bear without tearing apart. Hoop strength is the ability of a pipe to withstand internal pressure, bending and crushing forces.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that tensile strength is one component of hoop strength.

9. Claims 50-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman in view of Simpson as applied to claims 41-42, 47-49, and 59-63 above, and further in view of US Patent Application 2002/0022101 (Lenthe hereinafter).

Regarding claims 50-55, Chapman does not explicitly state that the first adjusted outer diameter and the second outer diameter are both actively increased or decreased during performance of the continuous sequence without changing circumferential draw of the oriented tube.

However, Simpson teaches an expansion apparatus, wherein expansion device has a variable diameter.

Additionally, Lenthe, states that the sum of the stretch ratio in the axial direction and in the circumferential direction is between 4 and 6, preferably between 4.5 and 5.5, particularly preferably being approximately 5 and that the stretch ratio in the axial direction being in a relationship of 3:2 with respect to the stretch ratio in the circumferential direction (paragraph 75). Thus, the circumferential ratio, in the particularly preferable scenario, must remain constant.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have the circumferential draw ratio remain constant, while actively increasing or decreasing the diameter with a variable diameter expansion apparatus for example via a sizing apparatus or an expansion plug, since it provides for an improvement in the manufacture of biaxially oriented plastic tubes (paragraph 2).

Regarding claims 56 and 57, Chapman teaches that the wall thickness of the extruded plastic tube is a result of velocity of the tube and the haul-off speed (page 4, lines 18- 31).

Lenthe, states that the sum of the stretch ratio in the axial direction and in the circumferential direction is between 4 and 6, preferably between 4.5 and 5.5, particularly preferably being approximately 5 and that the stretch ratio in the axial direction being in a relationship of 3:2 with respect to the stretch ratio in the circumferential direction (paragraph 75). Thus, the circumferential ratio, in the particularly preferable scenario, must remain constant.

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have adjusted the velocity of the tube and the haul-off speed to achieve a desired

wall thickness, without varying the circumferential draw of the tube, since it provides for an improvement in the manufacture of biaxially oriented plastic tubes (paragraph 2).

Regarding claim 58, the instant application states that Chapman teaches that the amount of axial draw in the final, expanded tube is set by the ratio between the speeds of a first haul-off tractor upstream of the temperature conditioning zone and a second haul-off tractor downstream of the expansion zone (p.7 of the instant application).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have varied the axial draw by varying the ration of the downstream haul-off speed of the tube to an upstream haul-off speed of the tube.

Response to Arguments

10. Applicant's arguments with respect to claims 41-42 and 47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YANA BELYAEV whose telephone number is (571)270-7662. The examiner can normally be reached on M-Th 8:30am - 6pm; F 8:30 am- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Daniels can be reached on (571) 272-2450. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. B./
Examiner, Art Unit 1741

/Matthew J. Daniels/
Supervisory Patent Examiner, Art Unit 1741